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A MULTIPLE-CONSTITUENCY, COMPARISON-GROUP
EVALUATION OF THE SCANLON PLAN

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W.P. #1367-82

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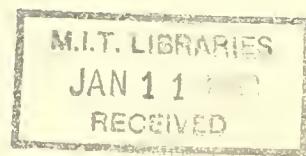
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While the Scanlon Plan usually improves productivity, the current study found benefits for the union (e.g., attendance at meetings) and workers (fewer health problems) as well as for the employer (suggestion making). However, Scanlon workers tended to be less active in national electoral politics, supporting the need for multiple perspectives in assessment. Data were gathered from 800 workers in seven unionized Scanlon Plan plants and warehouses and in a set of seven matched worksites.



When psychologists review organizational interventions to improve productivity and improve the quality of work life, they almost always include the Scanlon Plan (Hackman and Suttle, 1977). The Plan typically includes a monthly wage bonus tied to labor productivity, worker-management committee to process productivity suggestions, and a commitment to participative management (Lesieur, 1959; Driscoll, 1979). Frost, Wakely, and Ruh (1974) emphasize the psychological principles of equity, identity, and participation fostered by the Plan. Evidence of the Plan's impact on productivity is strong and growing (Shuster, 1981; White, 1980; National Commission of Productivity and the Quality of Work Life, 1975). Indeed a recent report by the U.S. General Accounting Office concludes that the Scanlon Plan and other organizational gain-sharing approaches increase productivity by 17% and the G.A.O. recommends such approaches as part of national policy to deal with the economic crisis and international competition.

Although the Scanlon Plan has much to recommend it from the employer's perspective, industrial and organization psychologists in the United States have recently begun to recognize the existence of other constituencies within work organizations, especially labor unions (Gordon, Philpot, Burt, Thompson, Spiller, 1980). Indeed, many union leaders suspect quality-of-work-life projects as a tool to avoid or decertify unions. The Scanlon Plan is attractive on this score because the Plan was developed by a union leader, Joseph Scanlon, in the 1930's and has been widely implemented in unionized plants with no instance of subsequent decertification of the union (Driscoll, 1979). However, there is little systematic evidence to date of the impact of the Scanlon Plan on the union as an institution.

The labor union is, moreover, only one of several constituencies involved in a work organization. For example, Michels (1949) argued long ago that the

organizational objectives of the union as an institution may diverge from the interests of individual workers taken as a collectivity. Again there is little evidence of the impact of the Scanlon Plan on individual workers.

Indeed, the society as a whole has an interest in interventions like the Scanlon Plan even beyond the affects on such societal objectives as productivity (through the employers efforts) or orderly conflict resolution (through the labor union). For example, people may be better or worse citizens as a consequence of their experiences at work. By one argument, people who are actively involved in the workplace may take a more active role in the political processes of the society.

The purpose of the present study is to evaluate the Scanlon Plan from each of these multiple perspectives: employer, union, workers, and society.

Hypotheses

Compared to a matched sample, establishments, under the Scanlon Plan will show more individual activities valued by the:

1. Employer
2. Union
3. Workers
4. Society

Method

Sample

Seven Scanlon Plan establishments, all of them unionized, were selected from the records of a single consulting firm, Frederick G. Lesieur Associates. The establishments were selected to provide a range of 1. success with the Plan in terms of size of bonus payout and of years under the Plan; 2. technology; and 3. size. Table 1 includes descriptions of the establishments. All nine

establishments selected initially agreed to participate but time and resources limited the study to the first seven scheduled.

Each establishment was matched with a control in terms of union status, product line, size, size of community, and ownership (local versus conglomerate). Matching was an extremely difficult process. Using Standard and Poor's listing by product lines, initial contacts were made with firms in the Midwest and Northeast to identify roughly suitable establishments for more careful matching. The response rate to our initial written and follow up telephone contacts was less than one in ten; the final selection ratio was even lower. The seven plants and warehouses finally included in the study are presented in Table 1. The reasons for non-participation (when given) included impending union negotiations, economic pressures (data were gathered from November, 1979 through August, 1980), and recent or impending changes in management. The seven control establishments therefore differed markedly from those refusing to participate. As a group they were experiencing favorable economic conditions and stability with respect both to management and the union. In this respect, the study represents an extremely conservative test of the hypotheses.

Respondents

Within each establishment, up to sixty people were chosen randomly from employee lists within the following framework. Forty non-exempt were selected in proportion to the number of unionized and non-unionized workers (e.g., office and technical personnel). Up to twenty managers were then selected to include the top establishment manager and his (all were men) direct reporting relationships. A random sample of the remaining managers was made up to a total of twenty. The sample size is not always sixty for two reasons: fewer than twenty managers worked in some of the smaller establishments and more than

the minimum in each category were selected to account for expected absences.

These variations in numbers of managers and in proportions by organizational level within the sample are controlled statistically in the analysis.

The 403 respondents in the Scanlon Plan establishments did not differ from the 402 non-Scanlon respondents with respect to education, sex, length of service, spouses income, training time required for their jobs, regularity and seasonality of work schedules, age, or number of dependents. The Scanlon respondents earned less pay, were more likely to be both married and white (the last due to one non-Scanlon plan establishment with the only substantial minority representation in the study was found). The differences in pay and race are controlled in the analysis.

Instrument

An anonymous questionnaire was filled out in small group sessions of about 45 minutes during work time and collected by the research team.

Variables

All the data are self reports taken from the questionnaire. For each variables subscales or items were standardized and summed.

Employer Outcomes

Six subscales (with the number of items given in parentheses) were included: effort (2), absence (2), turnover (1) work-related injuries and illnesses (1), suggestions (1), and performance (1). Items for the first four subscales were taken from the 1973 and 1977 Quality of Employment Surveys (Q.E.S.); the last two were ad hoc. Cronbach's alpha for the scale was .37. Since this reliability is low, separate analyses will also be performed on the subscales.

Union Outcomes

Five single items were taken from the 1977 Q.E.S.: voted in an election, held or nominated for office, gone to a meeting, filed a grievance, and served as a representative in negotiations or grievances. Cronbach's alpha was .70.

In three establishments, no questionnaire items were included about the union, at the request of the union in one non-Scanlon plant and at the request of management in one Scanlon and one non-Scanlon plant. Relations between union and management appeared favorable in all three establishments so the direction of bias from these omissions is unclear.

Worker Outcomes

Eleven health complaints were taken from the 1977 Q.E.S., ranging from trouble breathing to pains in back or spine. Three ad-hoc items were added for substance abuse: smoking, drinking, and eating "more than I used to". Cronbach's alpha was .82.

Societal Outcomes

Three items were taken from "1973 Q.E.S." for (1) following what's going on in government and public affairs, (2) voting in the last Presidential election, and (3) other involvement in electoral politics. Cronbach's alpha was .41. Since this reliability is low, separate will also be performed on the component items.

Data Analysis

Unit of Analysis

Since all people in a given plant or warehouse affected by the presence or absence of the Scanlon Plan both interact with and influence each other, the only truly independent observations in this study are the separate establishments. The analysis here is confined to that level. Since the sample size of establishments is so small (14 for most variables, 11 for union outcomes) a slightly more liberal cutoff rule for statistical significance is used than is conventional. An alpha level of .1 is accepted meaning a 1 in 10 chance of stating support for the Scanlon Plan when in fact there is no true difference.

Index Numbers

Since the data was gathered from individuals and the analysis is to be conducted on establishments, some method was required to combine individual data into an establishment-level index number for each of the four dependent variables. For each dependent variable, an regression equation using dummy variables for each establishment was solved to find the effect due to an individual being in a given establishment. The regression coefficient for each establishment's dummy variable is then an index number for the effect of each establishment on the dependent variable in question, when other factors are partialled out. Control variables were also included in each equation to eliminate the effect of organizational level (top management, other managers, bargaining unit members, other non-exempt personnel), pay rate, age, sex, race, education, and length of service. Equation 1 demonstrates the form of the analysis.

$$1) \quad Y_i = a + b_1 x_1 + b_2 x_2 + \dots + b_{13} x_{13} + b_{14} x_{14} + b_{15} x_{15} + b_{16} x_{16} + b_{17} x_{17} + \dots + b_{22} x_{22} + e$$

Where a = constant

$x_1 - x_{13}$ = dummy variables for establishments

$x_{14} - x_{16}$ = dummy variables for organizational levels

$x_{17} - x_{22}$ = pay rate, age, race, education, length of service, sex

$b_1, b_2, \dots, b_{13}, 0$ = index numbers for establishments on dependent variable y_i

The effects of differences among the organizations and their environments were assumed to be controlled by the matching design and are therefore not controlled statistically.

T-test for Matched Pairs

Since each outcome variable is correlated within each pair of establishments due to similarities in technology, size, and community, the appropriate

statistical procedure is a t-test for correlated means using each pair of establishments as a data point. The matching design decreases the variance in the standard error and this t-test provides an increase in statistical power, even though the degrees of freedom are reduced in half.

Results

Table 2 presents the results of the t-tests with correlated means on each of the four dependent variables. Using the composite measures for each constituency or perspective, support for three of the four hypotheses is provided at the agreed upon level of significance ($\alpha \leq .1$). People working in establishments using the Scanlon Plan report more activities valued by the employer and by the union. Moreover, they are significantly less likely to report complaints about their health. This third result is highly significant statistically. However, the Scanlon Plan is not uniformly positive in its description. People under Scanlon tend not to get involved in electoral politics. While this trend only approaches significance, it is in the opposite direction from the hypothesis. Table 3 presents the point biserial correlation between these same index numbers and a dummy variable for the presence of a Scanlon Plan. Although less significant the pattern of results is, of course, the same.

As noted earlier, the employer outcomes did not form a reliable measure. Therefore separate analyses was performed to determine which of the subscales accounted for the observed significant result. The reader should bear in mind, of course, that a significant result eliminates most concerns about reliability. Low reliability is an explanation for insignificant results to protect against Type 1 error. Awareness of low reliability prevents rejection of the alternative hypothesis when the null hypothesis was false, but supported due to measurement error. Using the composite of 6 subscales selected apriori to test the first hypothesis, the Scanlon Plan establishments were significantly preferable from the employer's perspective.

Table 4 presents the same analysis for each of the subscales within the overall variable measuring employer outcomes. The only significant subscales measure suggestion making and individual performance and the results are mixed. People under Scanlon make more suggestions to their supervisor about how to improve work methods. However, they also rate their individual performance as lower. The tendencies for the other subscales is also mixed with people under Scanlon showing fewer work-related injuries and illnesses and rating their effort higher, but also rating their absence and turnover as more frequent.

The a priori composite measure of positive political activity from the perspective of the larger society was also unreliable, so a similar analysis of the individual subscales, in this case items, was conducted. People in Scanlon establishments reported significantly lower levels of involvement in electoral politics such as working for candidates and they tended to keep less informed about political activity in general and to vote less frequently.

Discussion

These results provide still further evidence of the value of the Scanlon Plan as an employer strategy for improving organizational effectiveness. Indeed, the supplementary analysis provide support for the best known anecdotal comment about Scanlon Plans. People under Scanlon do "work smarter, not harder". There were significantly more suggestions made under Scanlon Plans than in their matched controls.

While much evidence of the value of Scanlon to the employer already exists, these results provide the first quantitative evidence showing the value of the Scanlon Plan to labor unions as a separate constituency within the work organization. Rather than replacing union activity with joint worker management

discussions, significantly higher levels of pure union activity were found under Scanlon than in the control group. Such evidence is important because many labor leaders often view the quality of work life movement as part of a national strategy by employers in the U.S. to eliminate labor unions altogether. Here at least is one plan to improve organizational effectiveness which does not diminish the union's role. However, a word of caution is in order here. These seven establishments were all serviced by a single consulting firm with long connections to and deep respect for the labor movement. Other consultants installing the same system, even with the same name, might have different attitudes towards unions and effects on labor union activity.

Moving beyond the two institutions of employer and union, the people working in the Scanlon establishments showed a somewhat unexpected benefit in the form of better health as individuals. The third hypothesis was phrased in a positive direction because of the strong normative bias of the quality-of-work-life movement about its impact on the psychological well-being of workers. If work is better, the story goes, then life will be better. However, numerous anecdotes about Scanlon Plans have always expressed a contrary fear, namely that group pressure for increased productivity and bonuses under Scanlon lead to cutting corners on safety and health. The results in this study contradict the anecdotes in this case: people report better levels of health under Scanlon. Not only specific psychosomatic complaints, but the previously mentioned general illnesses and injuries were less frequent under Scanlon. While physiological measures of job-related stress and disease would be preferable to these self reports, these results provide encouraging support for the quality-of-work-life hypothesis in its broadest form.

The only exception to the general positive description of the Scanlon Plan appeared for the general society as a constituency outside the work place. People under Scanlon tended to be less likely to keep informed politically and to vote. They were significantly less active in electoral politics. Of course the society benefits indirectly from the Scanlon Plan's contribution to other objectives already ascribed here to the employer (productivity), the union (orderly conflict resolution), and the workers as individuals (healthier citizens). However, most quality-of-work-life advocates assume positive spillover effects of work-centered activities out political into the/community. By way of explanation for this contrary result, it may be that electoral politics in the U.S. has simply ceased to interest most workers. Indeed, only half the eligible people in the U.S. even bothered to vote for President in 1980. Future research should explore spillover effects in the worker's more immediate political and social environment such as the neighborhood, school, church, and family.

The lower levels of societal-level political activity under Scanlon in this study does provide an important measure of "divergent" validity for the other three hypotheses. Respondents were not simply describing a uniformly positive picture to the research team.

More importantly, the divergent result with respect to political activity supports the need for the multiple-constituency approach to organizational evaluation taken in this study. The objectives of employer, union, worker, and society are not always the same and interventions to advance one set of objectives may ignore or detract from the others. Indeed, other quality-of-work-life interventions may show even less uniform impact. The Scanlon Plan was chosen for this study because of its explicit attention both to the interest of the employer and the union. The same stringent analysis from multiple

perspectives should now be applied to other more recent plans for improving organizational effectiveness and the quality of work life.

Table 1: Descriptions of Establishments

	Employment	Community Size	Principal Product	Part of Conglomerate
Scanlon 1	200	63,000	Metal Furniture	No
Control 1	117	31,000	Metal Furniture	No
Scanlon 2	395	40,000	Warehouse-Consumer Goods	Yes
Control 2	350	<u>/</u> 5,000	Warehouse-Grocery	Yes
Scanlon 3	90	16,000	Special Foundry Equipment	Yes
	135	45,000	Foundries	No
Control 3				
Scanlon 4	500	50,000	Automatic Assembly Systems	Yes
Control 4	937	30,000	Hydrostatic Transmissions	Yes
Scanlon 5	426	7,000	Cork and rubber Components	Yes
Control 5	700	4,600	Rubber Components	Yes
Scanlon 6	1500	60,000	Aircraft Parts	Yes
Control 6	1500	16,000	Automobile Parts	Yes
Scanlon 7	358	<u>/</u> 5,000	Distribution Center-Automotive	Yes
Control 7	256	<u>/</u> 5,000	Distribution Center-Automotive	Yes

Table 2: Results of T-Test for Matched Observations between Scanlon and Control Establishments

<u>Variable</u>	<u>T Statistic</u>	<u>d.F</u>	<u>a¹</u>
Employer: Outcomes	1.57	6	.08
Union: Outcomes	1.64	4	.09
Workers: Health Problems	-3.28 ²	6	.001
Society: Political Activity	-.98	6	.18

1. Onetailed significance levels

2. Minus sign means fewer health problems in Scanlon establishments

Table 3: Correlations between Presence of a Scanlon Plan and Variables of Interest

<u>Variable</u>	<u>r</u>	<u>n</u>	<u>a</u> ¹
Employer: Outcomes	.33	14	.12
Union: Outcomes	.33	11	.16
Workers: Health Problems	-.64 ²	14	.007
Society: Political Activity	-.24	14	.20

1. Onetailed significance tests

2. Negative sign means fewer health problems under the Scanlon Plan

Table 4: Results of Separate T-Tests for Between Scanlon and Control Establishments on each of the Subscales in the Employer and Societal Perspectives

<u>Subscale</u>	<u>Number of T-Statistic</u>	<u>d.f</u>	<u>a¹</u>
<u>Employer</u>			
suggestions	1.88	6	.06
work related ²			
injuries and illnesses	-1.04	6	n.s
individual performance	-2.45	6	.02
individual effort	.50	6	n.s
absence ²	1.12	6	n.s
turnover ²	.72	6	n.s
<u>Society</u>			
keeping informed about public affairs	-.76	6	n.s
voted in last Presidential election	-.95	6	n.s
other electorac activity (working for candidates, etc.)	-2.38	6	.03

1. one-tailed test of

2. Negative sign is a positive outcome.

Table 5: Correlations between Presence of a Scanlon Plan and Subscales within the Employer and Society Perspective

<u>Subscale</u>	<u>r</u>	<u>n</u>	<u>a¹</u>
<u>Employer:</u>			
suggestion making	.41	14	.07
work-related injuries and illness	-.29	14	ns
individual performance	-.37	14	.10
individual effort	.17	14	ns
absence ²	.30	14	ns
turnover ²	.21	14	ns
<u>Society</u>			
keeping informed about public affairs	-.23	14	ns
voted in last presidential election	-.27	14	ns
other electoral activity (working for candidates, etc)	-.53	14	.03

1. One tailed significance level

2. Negative sign is a positive action

FOOTNOTES

1. The research reported here was conducted with the financial support of the Industrial Relations Section, Sloan School of Management, M.I.T. and with financial assistance from a number of companies currently using the Scanlon Plan, including several selected for study. The data were gathered by Peter Kennedy, Paul Cornoyer, Skip Sidner, Tom Chambers, John Rasmussen, and John Proske. The data-analytic strategy was suggested by Henry Farber. Data analysis was performed by Jon VanOudenaren and David Pinckney. The manuscript was prepared by Terry Donovan. Fredrick G. Lesieur Associates provided access to their archives. Helpful comment were provided by Ann E. MacEachron. Special thanks are due to Charles A. Myers.

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